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ABSTRACT

In recent decades, the incidence of eating disorders has sharply increased. This paper reviews literature published between 1969 through 1992 which addresses personality characteristics of individuals with anorexia nervosa, restrictor subtype, utilizing the Minnesota Multiphasic Personality Inventory (MMPI-I). The current literature and research in the area of MMPI-I use and personality characteristics in anorexia nervosa is reviewed first, followed by a discussion of treatment approaches based on the MMPI-I findings on anorexic restrictors. The study's findings were inconsistent, but a general caricature for this population was presented. A chronic picture of immature, passive-aggressive individuals was exhibited along with depression, and social alienation, poor personality integration, clear thought disorders (such as body-image distortions), obsessionality, anxiety, low ego strength, and limited awareness of psychological problems. Researchers were also interested in treatment outcomes and several studies were interested in attempting to identify personality characteristics that may indicate a better prognosis for individuals with anorexia nervosa, restrictor subtype. Restrictor anorexics who acknowledged a greater need for attention and affection may fare better than individuals with other types of eating disorders due to the former's ability to address these specific needs in treatment. Suggestions for future research are presented. (RJM)

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USE OF THE MMPI-I IN IDENTIFYING PERSONALITY CHARACTERISTICS OF ANOREXIA NERVOSA, RESTRICTOR SUBTYPE: A REVIEW OF THE LITERATURE

A Doctoral Research Paper
Presented to
the Faculty of the Rosemead School of Psychology
Biola University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Psychology

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by
Cynthia Ramos Regardie
September, 1994

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ABSTRACT

USE OF THE MMPI-I IN IDENTIFYING PERSONALITY CHARACTERISTICS OF ANOREXIA NERVOSA, RESTRICTOR SUBTYPE: A REVIEW OF THE LITERATURE

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Cynthia Ramos Regardie

This paper reviews the literature addressing personality characteristics of individuals with anorexia nervosa, restrictor subtype, utilizing the Minnesota Multiphasic Personality Inventory (MMPI-I) (Hathaway & McKinley, 1970). Findings of the studies were inconsistent, but a general caricature for this population was presented. A chronic picture of immature, passive-aggressive individuals was exhibited along with depression, and social alienation, poor personality integration, a clear thought disorder, obsessionality, anxiety, low ego strength, and limited awareness of psychological problems. Those who acknowledged a greater need for attention and affection had a more positive prognosis. Research from 1969 to 1992 is reviewed and various methodological problems of the existing research are addressed. Suggestions for future research are presented.

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USE OF THE MMPI-I IN IDENTIFYING PERSONALITY CHARACTERISTICS OF ANOREXIA NERVOSA, RESTRICTOR SUBTYPE: A REVIEW OF THE LITERATURE

Introduction

In recent decades the incidence of eating disorders has sharply increased (Romeo, 1986). Researchers have responded by pursuing knowledge about the similarities and differences in the characteristics, progress and outcome of eating disorders (Epling & Pierce, 1992). Many studies have attempted to differentiate between the various characteristics of each eating disorder as a mean of better understanding and more successfully treating such individuals.

Anorexia nervosa is one type of identified eating disorder that has been in the literature for quite some time. In 1694 Dr. Richard Morton published the first recorded case of anorexia nervosa (in Sours, 1969). He wrote about young, wealthy females who were victims of self-starvation. The existence of such a phenomenon, in spite of the availability of food, confused many physicians. Gull (1873) provided his own description of anorexia nervosa that included more of the symptoms exhibited today such as occurrence in women between the ages of 15 and 23, extreme

weight loss without physical causes and the perception of being overweight. Romeo (1986) presented a summary of the medical field's response to the incidence of anorexia nervosa. These responses span the past four centuries. In the eighteenth century doctors often confused the symptoms of anorexia nervosa with the symptoms of tuberculosis. This confusion was due primarily to the emaciated appearance of anorexic women. During the nineteenth century, doctors diagnosed anorexia nervosa as a form of hysteria due to the irrational beliefs expressed by women that they were overweight and needed to continue to lose weight in spite of physical evidence to the contrary. Due to the extreme loss of weight by anorexics, doctors in the early part of the 20th century considered the disease the result of a pituitary disturbance and, therefore, an organic disease. For the next twenty-five years, using the same line of reasoning, doctors diagnosed anorexia nervosa as Simmond's disease, a primary endocrine disorder (Romeo, 1986; Sours, 1969).

The first purpose of this paper is to provide a critical review of the current literature and research in the area of MMPI-I use and personality characteristics in Anorexia Nervosa, restrictor subtype. Diagnostic criteria for eating disorders found in the research will be cited as a guideline and to provide a frame of reference. The second purpose is to discuss treatment approaches based on the MMPI-I findings on anorexic restrictors. The Diagnostic and Statistical Manual, Fourth edition, (American Psychiatric Association [APA], 1994) states that anorexia nervosa, restrictor

subtype is "presentations in which weight loss is accomplished primarily through dieting, fasting, or excessive exercise. During the current episode [of anorexia nervosa], these individuals have not regularly engaged in binge eating or purging" (p. 541).

Definitions of Major Eating Disorders

Today the once general label of eating disorder has been delineated and includes bulimia, morbid obesity, and anorexia with restrictor and bulimic subtypes.

Currently, psychology again classifies anorexia nervosa as a mental illness, as it has become evident that these individuals often possess psychological features such as perfectionism and depression that contribute to the onset and progression of the disorder. Criterion for diagnosis are readily available to therapists in the Diagnostic and Statistical Manual, Third edition, Revised (American Psychiatric Association [APA], 1987). The criteria for diagnosis include (a) refusal to maintain body weight over a minimal normal weight for age and height; (b) intense fear of gaining weight or becoming fat, even though underweight; (c) disturbance in the way in which one's body weight, size, or shape is experienced, and (d) in females, absence of at least three consecutive menstrual cycles when otherwise expected to occur.

Bulimia is diagnosed when the following characteristics are present (a) recurrent episodes of binge eating, (b) a feeling of lack of control over eating behavior during the eating binges, (c) the

person regularly engages in either self-induced vomiting, use of laxatives or diuretics, strict dieting or fasting, or vigorous exercise in order to prevent weight gain, (d) a minimum average of two binge eating episodes a week for at least three months, and (e) persistent over concern with body shape and weight (APA, 1987).

Morbid obesity is defined in a variety of ways, but most often an individual is considered morbidly obese when 25% or more above the weight expected for his or her height and body size (Romeo, 1986). Some researchers define it as at least 100 pounds or 100% overweight for standard height, sex, and age (Scott & Baroffio, 1986).

The anorexia subtypes of restrictor and bulimic arose in recent years due to the emergence of a pattern of bingeing and purging as an additional means of losing weight among a population (Casper, Halmi, Goldberg, & Davis, 1980; Casper, Hedeker, & McClough, 1992; Edwin, Andersen, & Rosell, 1988; Shisslak, Pazda, & Crago, 1990). These subtypes arose as a means of differentiating those individuals, the restrictors, who relied on self-starvation to become and remain thin and those individuals, the anorexic bulimics, who also use bingeing and purging along with periods of self-starvation in their pursuit of thinness.

Historical Approaches to Researching Anorexia Nervosa

Although research on individuals with anorexia spans several years, anorexic literature is dominated by clinical accounts, the majority of which involve detailed case histories and retrospective analysis of clinical data (Skoog, Andersen & Laufer, 1984). There have been few reports of objective personality assessment with Anorexia Nervosa subjects (Pillay & Crisp, 1977). Nevertheless, such studies and analysis helped in the formulation of clearer criteria for the diagnosis of anorexia. Researchers did not formally assess the possibly unique personality characteristics of anorexia. Over time the need for this particular information as a guide for refining treatment interventions became apparent.

This paper examines three common areas of concentration in the research. A large portion of the literature early on came from a psychodynamic perspective with more of a focus on understanding anorexic's ego strength and sexual anxieties (the infantile regression seen in Pierloot, Wellens, & Houben's 1975 study). Independence struggles and hostility problems with mother (Sours, 1969, reported these for patients whose mother's appeared domineering) were also viewed as dynamics driving the anorexia nervosa. Self starvation as a coping mechanism for conflict (hypothesized as based on underlying experiences such as concern over one's developing female identity according to Pierloot et al. in 1975) was another common explanation for why women abstained from food. There was less energy expended by

researchers in examining possible common personality characteristics of the anorexic individual (Pierloot et al., 1975; Sours, 1969).

The next general area of exploration seen in studies was body image distortion exhibited by anorexic individuals (Wingate & Christie, 1977). Interest increased for examining this particular component of the disorder as extremely emaciated women continued to insist upon the need to lose weight as they pointed out parts of their body still considered too large or fat (Romeo, 1986). The overestimation of body width by anorexics has been described as reaching delusional proportions. This overestimation causes anorexics to continue the cycle of starvation and keeps the illness self-perpetuating (Romeo, 1986). Studies focusing on body image distortion attempted to identify personality characteristics that influence anorexics' distorted view of their bodies (Pierloot & Houben, 1978; Strober, 1981).

Anorexic individuals have been compared to a variety of diagnoses: individuals struggling with addictions, (Leon, Kolotkin, & Korgeski, 1979), bulimics (Casper et al., 1980; Casper et al., 1992; Edwin et al., 1988), schizophrenics (Small et al., 1981), incest survivors (Scott & Thoner, 1986), the morbidly obese (Scott & Baroffio, 1986), and individuals suffering from other type of starvation (Goodwin & Andersen, 1988). The rationale behind many of these studies was a desire to discover how anorexia nervosa is similar to other disorders and what personality

characteristics differentiate anorexia nervosa from these similar disorders. Researchers hoped to use this information in developing more successful treatment interventions for these individuals (Casper et al., 1992). Little was said about the health risks involved with eating disorders, especially with anorexia nervosa.

More recently the literature has focused on differentiating and subtyping eating disorders rather than placing the various disorders in the broad category of eating disorder (Casper et al., 1980; Casper et al., 1992; Edwin et al., 1988; Piran, Lerner, Garfinkel, Kennedy, & Brouillette, 1988; Scott & Baroffio, 1986; Shisslak et al., 1990;). For many years eating disorders were treated with the primary focus on returning to normal eating (Epling & Pierce, 1992). This was especially true for anorexia nervosa.

The use of self-starvation as a mean of achieving an ideal weight is cause for concern because it not only jeopardizes an individual's health, but the possibility of the disorder resulting in death is a reality for many anorexics (Emmett, 1985). The mortality rate of individuals with anorexia nervosa is one of the highest of the mental illnesses. The mortality rate is reported in the literature as ranging from 5-15 % (Pierloot et al., 1975; Romeo, 1986; Sours, 1969). Theander (in Epling & Pierce, 1992) reported an 18% mortality rate at long-term follow up. Some outcome studies have reported mortality rates ranging as high as 25% (Edwin et al., 1988). Although differing reporting techniques affect the percentages, it still remains that individuals dealing with anorexia nervosa are at a high risk of death from malnutrition.

It is also important to note that some anorexics die as a result of suicide, however, the majority neither commit suicide nor do they believe that their starvation will lead to death (Emmett, 1985; Epling & Pierce, 1992). Anorexic individuals who attempt and/or succeed with suicide tend to display more severe pathology, particularly impulsivity and depression, than those who never make attempts (Romeo, 1986). These are important characteristics for researchers to keep in mind as general characteristics of anorexics are identified and, thus, influence treatment approaches.

The incidence of anorexia nervosa has sharply increased over the past few decades (Epling & Pierce, 1992). It is apparent that during this same time period American culture has become more focused on defining a woman's desirability in terms of her thinness (Romeo, 1986). The media contains various images of women associated with beauty, material advantage, success and happiness who seem to appear thinner with each passing year (Epling & Pierce, 1992). Add to this the emphasis placed on dieting and physical fitness and one is able to see how social factors play a part in the rise of this disorder's occurrence (Emmett, 1985; Epling & Pierce, 1992).

An ironic component contributing to the increase in anorexia nervosa is that as the popular press has paid considerable attention to this disorder some women have come to consider self-starvation as another type of diet without regarding the warnings of the seriousness of this disorder (Romeo, 1986). For some women, self-

starvation has become another tool in the fight against becoming overweight.

In examining this disturbing trend, it became apparent that better differentiation between the patterns of abnormal eating behavior was necessary to better treatment interventions that resulted in long term improvement in anorexia nervosa. These interventions needed to address the personality characteristics and pathology exhibited in each of the eating disturbances. Of particular interest to this author was recent studies that have focused not only on differentiating anorexia nervosa from other eating disorders, but delineated subtypes within anorexia nervosa. Current literature now includes anorexia nervosa, bulimic subtype and restrictor subtype.

Use of MMPI-I in Identifying Personality Characteristics

Before 1981 the contribution of psychological testing to personality diagnosis and understanding of anorexia was virtually nonexistent (Small et al., 1981). As conflicting reports about personality characteristics of anorexia nervosa began to emerge, researchers moved from sole reliance on detailed case histories and the analysis of clinical data to using an objective personality measure that had already proved to be helpful in identifying the personality characteristics of a variety of other disorders.

The MMPI-I is the most extensively used inventory in clinical practice to assess psychopathology in patient and nonpatient

populations (Butcher, 1979; Graham, 1987). Researchers have used the MMPI-I in a wide variety of studies to establish profiles for specific disorders and to compare subgroups within a given disorder (Small et al., 1981). Recent studies have used the MMPI-I with the aim of discovering the personality characteristics associated with anorexia nervosa (Scott & Thoner, 1986; Sours, 1969). Several researchers (Casper et al., 1980; Edwin et al., 1988; Scott & Baroffio, 1986; Shisslak et al., 1990) have used the MMPI-I to test hypotheses around the existence of subtypes of anorexia nervosa.

The hope was that these findings would aid in the development of more effective treatment interventions for anorexics. The numerous conflicting findings and observations that have appeared in the clinical literature on personality factors in eating disorders suggest the use of standardized personality tests such as the MMPI-I for contemporary research (Skoog et al., 1984; Small et al., 1981). A standardized measure allows for more reliable interpretations of the results and, thus, better generalizability of the findings.

Strengths of the MMPI-I

The MMPI-I is a standard measure that lends itself to easy comparisons about personality organization regarding (Small et al., 1981). The MMPI-I has demonstrated higher validity and reliability levels than have many personality measures in the anorexia literature (Goodwin & Andersen, 1988). Scales have reasonably strong temporal stability. They are not influenced by sources of error variance. Subjects have produced the same code types on different administrations of the test (Graham, 1987). Additionally,

researchers have often used the MMPI-I because it reports a wide range of personality dimensions (i.e., depression, paranoia, anxiety). Profiles of personality disorders have also been demonstrated (borderline, narcissistic, etc.) in a variety of studies (Graham, 1987).

When code types change dramatically, there are often concomitant behavioral changes. Thus, the MMPI-I allows the clinician to monitor significant behavioral changes associated with a particular treatment method with both pre-treatment and post-treatment administrations of the test. The MMPI-I is a useful tool in providing quantitative confirmation of observed clinical improvement.

Over the past 25 years increasingly more studies (Casper et al., 1980; Casper et al., 1992; Goodwin & Andersen, 1988; Leon et al., 1979; Pierloot et al., 1975; Piran et al., 1988; Scott & Baroffio, 1986; Scott & Thoner, 1986; Shisslak et al., 1990; Small et al., 1981) used the MMPI-I as a tool for identifying personality characteristics and attitudes exhibited by individuals with anorexia nervosa for the reasons discussed.

The majority of research on individuals with anorexia nervosa has taken place in the inpatient setting, which leads to questions about the generalizability of these studies. Many concerns arise concerning how one is to understand the findings and examine the limitations of studies focusing on anorexics in restricted categories such as inpatient settings. Perhaps learning about the characteristics of anorexics in outpatient settings could aid in the

early detection and successful treatment of this disorder (Casper et al., 1992). Questions about research studies' generalizability have also resulted from the varying definitions of anorexia nervosa used in the clinical literature (McFarlane, Bellisimo, & Upton, 1982; Pierloot et al., 1975). Some definitions are not as detailed and focused as other definitions (Sours, 1969) and these differing definitions may affect research findings. The review of literature focused on anorexia nervosa involving the MMPI-I for the following reasons. First, the MMPI-I is a popular personality measure and extensive research and broadened clinical applications has expanded its use greatly over the years (Graham, 1987). Second, many studies conducted on personality characteristics of eating disorders have used the MMPI-I (Biederman, Habelow, Rivinus, Harmatz, & Wise, 1986). Third, there are questions about how insight into the personality characteristics of anorexics, particularly restrictor subtype, could influence the development of treatment approaches for implementation at an earlier point in treatment (Edwin et al., 1988).

This review will: (a) examine and critique studies that have attempted to gain more information, through the use of the MMPI-I, about the personality characteristics of individuals diagnosed with anorexia nervosa, (b) examine recent studies attempting to identify subtypes within anorexia nervosa, and (c) provide a summary of the various findings, and treatment implications based on the findings to date (specifically with the restrictor subtype). The review

concludes with suggestions for future research on anorexia nervosa, restrictor subtypes, based on the information gathered to date.

Review of the Research

The following section will examine the various aspects of the research literature with the focus on knowledge to be gained, as well as addressing potential confounds in the studies reviewed. This information will not only guide the construction of intervention techniques, but will help define avenues for further research of anorexia nervosa.

Use of Vague Definitions

Two studies, including one of the earliest studies on anorexia nervosa using the MMPI-I, contained vague definitions of anorexia used in their subject selection. Upon examining the body of research, the need for similar definitions of anorexia nervosa in studies becomes apparent. This similarity gives the results more meaning and thus adds to the knowledge of personality characteristics common to those individuals with anorexia nervosa.

Sours' (1969) study examined four patients with signs and symptoms of anorexia nervosa. He used both clinical and psychological test methods. He examined the patients' parents with the same methods. He wanted to demonstrate the wide variability of symptomatology and hoped to determine whether anorexia nervosa is a specific diagnostic entity. The study's definition of anorexia nervosa placed an emphasis on elective restriction of and

preoccupation with food; manipulation of food and people who feed; passive defiance; irritability; sadness and guilt; and onset and delayed insomnia. This definition also included occasional bulimia. The study was one of the first to examine anorexia nervosa to determine whether this disorder consisted of a unique set of symptoms that would be useful in developing helpful treatment approaches.

Raw scores for the MMPI-I scales were presented without any detailed analysis of what the individuals' profiles revealed. The F-K scores were briefly discussed. One patient's score demonstrated that she maximized her symptoms to avoid discharge, two other showed the lowest F-K scores, and one patient attempted to dissimilate her pathology. The results found the parents to have low scores scale 6 and the self control (SC) scales, but did not present conclusive data for the anorexic patients.

The sample size was very small and it appears that severe characterological pathology was present for each subject in addition to an eating disorder (schizophrenia, obsessional character disorders and hysterical personality traits). This precludes the results from being generalized to other anorexics. The study included one male subject but no discussion was presented about how his experience of anorexia may be similar or dissimilar to the women's experiences. The somewhat vague definition used also allowed for the possibility of secondary anorexia, that is, anorexia as the result of another psychological problem. There seemed to be more of an interest in the family dynamics, particularly from a

psychodynamic viewpoint, as opposed to individual personality characteristics of these individuals.

Pierloot et al. (1975) studied 32 female inpatients who were divided into groups labeled cured, no symptoms present (N=16), improved (N=5), and unimproved (N=11). They used five criteria for the basis of their delineation of anorexia nervosa: considerable weight loss (15-20%); limited food intake; amenorrhea; juvenile age of onset; absence of primary organic or specific psychotic disorder. They postulated that anorexia nervosa distinguished the disease from secondary forms of food refusal and weight loss. This study also had a psychodynamic viewpoint. Symptomatology was interpreted as a coping mechanism for a conflict around the realizing of the adult female identity.

Statistical comparisons were limited to the extreme groups. Pierloot et al. (1975) found that the MMPI-I profiles were roughly higher for the group of unimproved individuals. Mean scores of the cured group (no symptoms present) were lower than 70. A T-score of 70 is two standard deviations above the mean and, thus, considered highly significant. When the authors considered the means of the T-scores higher than 69, they obtained a mean of 1.57 scales for the cured group against 5.22 for the unimproved and 3 for the improved group.

In the unimproved group, scale 8 was the highest score for 5 of the 9 patients and the second highest for 2 patients. In the group of the cured, no patient obtained a profile with schizophrenia as the highest score. A better prognostic outcome was suggested by a

lower general profile on the MMPI-I. A high score, 70 or above, on the schizophrenia scale seems predictive of a worse prognosis.

Limits of generalizability are apparent as one considers the small sample size, the inpatient status of subjects, and that prognosis were defined with reference only to one specific form of treatment, primarily behavior therapy. Also, the duration of follow-up was limited to a few years and the studied group is not representative of anorexia nervosa.

Single Subject, Male

McFarlane et al. (1982) examined both process and outcome of the management of a patient with atypical anorexia nervosa, a 14-year-old male raised in a lower class home. The variety of symptoms seen in this patient included abdominal pain, weight loss, anorexia, and vomiting. The MMPI-I was administered upon admission and on follow-up four months post discharge.

In the pre-treatment profile, the validity scales indicated marked evasiveness and pronounced use of denial, repression, and rationalization. The clinical scales were consistent with the picture of an individual who was unwilling to accept psychological interpretations for his behaviors, and who had poor insight concerning his actions. This pre-treatment profile suggested the need for an active treatment rather than an insight-oriented one.

The authors felt a multiple treatment procedure would best address the issues of the subject as presented in the MMPI-I. The treatment occurred in two phases and employed an operant conditioning program.

Limitations of this study include sample size and lack of discussion of how anorexia nervosa may be experienced differently by males. The possible presence of an additional psychological disorder may have influenced the MMPI-I results. The authors did not address this potential confound. The generalizability of the findings are thus limited beyond the narrow limit of this individual's particular characteristics. However, the study lends itself to the generation of hypotheses for future research.

It appears that individuals with anorexia nervosa who had higher MMPI-I profiles tended to fall into the unimproved category of patients. However, difficulties in comparing and generalizing studies' results arise due to the possibility of subjects not being appropriately placed in the anorexia nervosa category when vague definitions are used. This confound could limit what these studies have to offer with identifying personality characteristics of anorexia nervosa.

The Use of A Single MMPI-I Scale

Another group of studies with limitations in their design included four research studies that focused primarily on a single scale of the MMPI-I. The generally accepted approach to gathering information from the MMPI-I is to examine the general personality profile generated by the individual's responses. Any one scale is then examined more closely considering the overall profile. Without the general information provided by the overall configuration of the protocol, it is difficult to make accurate

speculations about what any one scale has to say about the individual (Edwin et al., 1988; Graham, 1987).

Wingate and Christie (1977) studied a group of 15 female anorexic patients and compared them with a normal control group of 15 non-hospitalized females matched for socioeconomic class. They were concerned with the possibility that anorexic patients have low ego strength, as measured by the Ego Strength (Es) Scale of the MMPI-I, and that low ego strength was associated with inaccuraciesof perception, and therefore reflected in distortions of body image commonly present with anorexics. There were significant differences in the Es scores of the anorexic and control groups ($t = 3.94$, $p < 0.001$) with mean values being 36.6 and 45.6 respectively. Upon comparing the Es scale to body size estimates, they found that overestimates of body image were negatively correlated with ego strength for anorexics.

A further control group was examined, consisting of 15 non-patient schoolgirls matched for socioeconomic class and having a mean Es of 37.06. In comparing this group's body overestimates there were no significant differences at shoulders and hips. However, the anorexics' overestimates of waist width were significantly greater ($t = 5.99$; $p < 0.001$). Wingate and Christie (1977) felt that "a clear relation between personality and anorexia has been demonstrated in contrast to some of the previous attempts" (p.203).

The sample size of this study was fairly small ($N=15$) with the subjects at differing stages of treatment in an inpatient setting at

the time of testing. All subjects were also ammenorrheic; this condition's onset during the disorder varies among anorexics. The researchers did not clearly identify the criteria used for diagnosis of anorexia nervosa. These factors, along with the focus upon one scale, lead to questions about what new information can be reliably taken from the study and applied to other groups of anorexics.

Falk, Halmi, and Tryon (1985) studied 20 female inpatients meeting the DSM-III (APA, 1980) criteria for anorexia nervosa. They measured the relationship between weight gain and motor activity and used the MMPI-I, primarily scale 5, to help determine if any personality characteristic correlated with increased motor activity. They found that the more dominant and masculine (that is, these women scored higher on scale 5) anorexic women exhibited greater motor activity during the pre-treatment week than their more passive counterparts and later exhibited greater weight gain. No mention was made about overall profile configurations of the MMPI-I.

A possible confound in this study is that the inpatient volunteers were also participants in a comprehensive drug treatment study that was concurrent with the activity measure study. Factors making drug treatment necessary may have influenced overall configurations on the MMPI, particularly on the one scale examined. Medication from the drug treatment may have also influenced to some degree the MMPI-I results. Finally,

unknown factors that cause someone to volunteer for this type of study may have also affect the findings.

Additionally, the study did not use control or comparison groups that raises questions about the generalizability of the findings beyond the population examined. It thus becomes difficultto state whether or not the results provide useful information about anorexics or just for this particular group.

Eckert, Goldberg, Halmi, Casper, and Davis (1982) used a variety of rating instruments to assess 105 hospitalized females, meeting the rigid research diagnostic criteria of Feighner et al. (1972) for anorexia nervosa. They were searching for the presence of depressive symptomatology during treatment (behavior modification and cyproheptadine or placebo) to better understand how this affective component might have influenced food habits for these individuals. Reported results from the MMPI-I focused on scale 2 without any reference made to the general MMPI-I profile of these subjects. Anorexics were mildly to moderately depressed (just over 2 SD above the general population mean) and appeared to have more bizarre food habits and exhibited more severe symptoms of anorexia nervosa (greater percentage of weight loss, etc.). This suggested that anorexics with higher levels of depression had poorer prognosis for recovery.

The MMPI-I was used as one tool for assessing depressive symptomatology in the subjects. The sample size of 105 was large for most studies and could thus add a greater robustness to the study's findings. However, without an examination of the content

and various supplemental scales little information was provided about the additional characteristics that may have also been present for the anorexics. The depression might have been a reaction to the turmoil present in the lives of these adolescents and not part of a true depressive state. This was another study without a control or comparison group included which limits the generalizability of the findings.

Leon et al. (1979) examined the possibility of a general characteristic of addiction proneness, using information from the MacAndrew Scale (MAC) of the MMPI-I and included anorexia nervosa under the umbrella of severe habit problems. They examined 37 adolescent inpatients. General MMPI-I information was not provided for the anorexia nervosa group.

The anorexics did not score in the addictive range on this scale and did not show significant differences in MAC scores in comparison to normal controls. Since general profiles were not available for all the subjects involved in the study, it is not possible to examine the various characteristics of anorexics that are similar or dissimilar to the other subjects who did fall in the addictive range on the MAC scale. A limitation on the use of the MMPI-I is that the subjects were instructed to fill out the MMPI-I forms at home. This procedure could have introduced confounds into the resulting profiles as it was uncertain whether the subjects followed the procedure on which the test was normed (i.e., taking the entire test in one sitting). There might also be a strong argument against the

researchers' consideration of the refusal to eat and/or vomiting as substance abuse.

Summary of Findings - I

The finding of studies focusing on a single content scale provided limits for further understanding of anorexia nervosa. In summary, these studies found that an overestimate of body image was negatively correlated with ego strength; those anorexics with mild to moderate depression exhibited more bizarre food habits and more severe symptoms and thus had a poorer prognosis for recovery; those who exhibited a more dominant personality style had greater weight gain during treatment; and these individuals did not score in the addictive range on the MMPI-I.

Questions and concerns generated by this single scale approach to MMPI-I results could result in improved treatment approaches and lead to additional studies that would cover the points in question. While studies such as these may report significant relationships and findings, it is necessary to keep in mind that the MMPI-I was intended to provide a general profile of an individual's personality characteristics, and thus provide a context for the information provided by each of the individual scales of the test.

Comparisons to Nonrelated Groups

Small et al. (1981) and Scott and Thoner (1986) conducted studies that focused on comparing individuals with anorexia nervosa to populations with seemingly nonrelated backgrounds such as schizophrenia and sexual abuse. These researchers

explored the possibility of the presence of a deeper personality disturbance in anorexics than commonly suggested by psychiatric interview. They were also interested in any possibly overlooked similaritiesbetween these populations in spite of different developmental and behavioral histories.

Small et al. (1981) studied 28 females referred to the National Institute of Mental Health. The anorexics were diagnosed according to Feighner et al.'s (1972) behavioral criteria of primary anorexia. The schizophrenics were diagnosed by psychiatric interview and personal history. The researchers attempted to define the contribution of psychological test data to differential diagnosis and personality organization in primary anorexia nervosa. Due to the presence of psychotic disorders in several test protocols, there was an interest in comparing test responses of anorexics to a group already identified as psychotic, that is, schizophrenic individuals.

Striking similarities existed between the two groups' MMPI-I profiles. For both groups, scales 2, 4, 6, 7, and 8 occupied the first five rankings ($T > 70$), although in slightly different order. The primary anorexia nervosa (PAN) group showed diverse traits characteristic of character, neurotic, psychotic and psychosomatic disorders. These diverse anomalies were not different from those endorsed by schizophrenics. Small et al. (1981) concluded that anorexic persons exhibited extremely poor personality integration and that the disorder was more serious than neurosis.

The outstanding low scores on scale 5, indicating a strong endorsement of traditional feminine qualities, conflicts with

common assumptions that anorexia nervosa represents a denial of developing femininity. Common characteristics suggested by the MMPI-I included expression of concerns (exhibited as worry, pessimism and oversensitivity to words and actions of others), depression, and alienation. The finding that the two seemingly different groups were not distinguishable on this test is striking. These results supported previous findings of a clear thought disorder in many anorexics. Profile configurations suggested that these anorexics shared common features of borderline personality disorder (significant elevations on scales 2, 4, 6, and 8). The study was thorough in discussing the MMPI-I profiles by covering what significant scale elevations, as well as low scores, revealed about the subjects.

Limitations of the study involve the small sample size of 14 anorexic females, as well as the inpatient status of the subjects. These factors call into question the generalizability of this study to anorexics beyond such narrow parameters. Also, no control group was used, which also precludes generalization of the results; no rationale was provided for this choice.

Scott and Thoner's study (1986) focused on isolating psychometric similarities and differences between anorexia nervosa and incest survivors. These similarities were discussed in the context of ego deficiencies. The female subjects included a group of 30 anorexic patients, a group of 30 incest survivors (all in therapy), and a control group of 30 subjects with no history of eating disorders or sexual abuse. The control subjects were matched with

the other groups on age, middle socioeconomic status, and geographical area. The anorexics were diagnosed with Primary Anorexia Nervosa using the DSM-III (APA, 1980) criteria.

Employing the average T-scores, the rank-order correlation, $\underline{p}$ (9), between the anorexic and incest groups was 0.621 ($\underline{p} < 0.05$). The correlation between incest and control average T-scores was 0.062 while $\underline{p}$ between anorexic and control average T-scores was -0.317. This confirmed the hypothesis set forth by the authors that the profiles of the incest and anorexic groups would be similar and that both profiles would be different from that of the control groups.

The anorexic and incest groups were homogenous and significantly different from the control group on scales F, Es, 4, 6, 7, 8, 9 and 0. The significantly lower mean scores on ego strength indicated that the anorexic and incest groups were less well adjusted psychologically and had extremely limited personal resources for coping with problems. Lowered ego strength correlated with more pathological elevations on the clinical scales, which is consistent with the literature that suggests ego strength tends to be lower for individuals with psychological problems. The common cluster of psychological dynamics for the anorexic and incest groups gave a somewhat distinct characterological profile of ego functioning shared by these two groups.

Significant differences were also present between the two groups. The anorexics' scores were significantly more elevated than the incest survivors on scales 1, 2, and 3. Elevations on scale 1 were

operating to bind anxiety by helping anorexics displace emotional tension into somatic obsession with weight. The scale 2 score reflects aggression turned inward and the self-punitive results can be extreme starvation. Anorexics' lack of awareness of psychological and physical damage was believed to be represented by the ego defense mechanisms of denial and repression (significantly elevated scale 3).

The sample of 30 in this study allows for greater generalizability of the findings to other inpatient anorexics. Data gathered on a group this size allows for a broader, perhaps much clearer picture of personality characteristics of anorexics. Examination of general MMPI-I profiles provide a better sample of characteristics for this population. The authors did recognize that with inpatients and outpatients (incest group) compared to controls, the variance in MMPI-I profiles could have been due to the difference in patient status.

Summary of Findings - II

In these studies, individuals with anorexia nervosa showed depression, alienation, and extremely poor personality integration. Their profile configurations on the MMPI-I were similar to those of schizophrenics and common features of borderline personality were also seen. Anorexics were also less well adjusted psychologically and had extremely limited personal resources for coping with problems.

Treatment Issues Examined

Five studies were concerned with treatment issues related to anorexia nervosa. This area of research is important in the development of treatment approaches that better address the personality characteristics and psychological factors unique to anorexia nervosa.

Skoog et al.'s study (1984) arose from the belief that it is sometimes difficult to distinguish objective from subjective judgments or observations. Ideally such methods are complemented by more exact and less subjective measures. They believed objective personality inventories, such as the MMPI-I, provided a rich source of pertinent clinical information upon admission. Most importantly, the test results permitted the clinician to monitor significant behavioral changes associated with treatment. They compared pre- and post-treatment MMPI-I profiles of 12 female inpatients with anorexia nervosa at The John's Hopkins Hospital (JHH). All patients received treatment characterized by a four stage empirical approach including: (a) nutritional rehabilitation with food prescribed as medication, (b) individualized psychotherapy initiated as nutritional status improved, (c) control of food, weight, and exercise returned to patient, and (d) post-hospitalization follow-up.

Researchers compared results using a scale-by-scale analysis of variance. Three clinical scales decreased significantly following treatment: scale 1 = $p < .05$, scale 2 = $p < .01$, and scale 0 = $p < .05$. One validity scale, the K scale, increased significantly with

$p < .01$. The overall post-treatment profile for the JHH patients showed a return to normalization greater than one standard deviation. The significant elevation in K scale scores after treatment supported this finding. K scale increase has been observed routinely after successful psychological intervention, generally a multi-leveled approach in an inpatient setting. These results were believed to have supported the notion that the MMPI-I is sensitive to treatment change for anorexic patients and could be considered a useful tool in providing quantitative confirmation of observed clinical improvement.

The comparison of JHH and individuals evaluated at the National Institute of Health (NIH) yielded an almost identical profile (2-4 code). Significantly, these were two distinct pre-treatment patient populations from JHH and those in Feighner et al.'s 1972 study, located in different hospitals and evaluated using different diagnostic criteria. This suggests a common constellation of personality characteristics in anorexia nervosa.

The results raise several questions. The first challenges the well-accepted view that anorexics vary considerably in terms of their personality. That is, is this question a valid one? The second asks if the common profile obtained by the JHH and NIH patients support the possible existence of an anorexic profile?

Goodwin and Andersen (1988) explored the relationship between starvation and certain personality characteristics of anorexics. The main question guiding their work was how much

of the psychological picture of anorexics is attributable to the physical state alone, how much to theorized anorexic personality types, and how much to an interaction of the two. The anorexia nervosa group (N=33) was compared to low weight patients (N=10) rated as having a normal mental status (no indications of psychopathology) and low weight (N=7) patients rated as having an abnormal mental status (psychopathology indicated).

On four scales the anorexia nervosa group averaged T > 70. These were scales 2, 4, 7 (obsessionality and anxiety), and 8 (here indicating social alienation and thought disorder). On scales 1, 3, and 6 (sensitivity and projection), the means were T > 65. Their elevation was not as great on the F scale but high enough to be of interest. Such an elevation suggests a response style that tends to highlight pathology, which plays a part in elevating the other clinical scales.

The large standard deviations in the results within the anorexia nervosa group supported the view held by most researchers that anorexics vary considerably in personality and may fall into several distinct groups. This finding was the opposite of that in Skoog et al.'s study in 1984. The comparisons of anorexia nervosa patients with individuals classified as neurotics exhibiting severe weight loss produced findings of lower somatization in the neurotics and higher interpersonal sensitivity in the anorexia nervosa group.

The anorexia nervosa and low weight individuals of abnormal mental status groups had elevations on depression, obsessionality,

and moodiness, which was consistent with reports of personality states in the literature on human starvation (Keys, Brozek, Henschel, Mickelson, & Taylor, 1950). However, the low weight individuals of normal mental status group did not have any scales with a mean above the pathology level which suggests that certain personality changes do not necessarily follow starvation. Thus, starvation alone does not explain the tendency of anorexia nervosa patients to score in the psychopathological range of the MMPI-I nor the display of symptoms similar to those with depressive and obsessional symptomatology.

This study's design had various strong points, including the use of a well validated measure of a wide range of personality dimensions, the MMPI, accepted diagnostic criteria for anorexia nervosa, and rigorous statistical techniques for data analysis. Subjects were drawn from individuals hospitalized at approximately the same time to decrease the number of uncontrolled factors. The sample size of 50 inpatients is rather large and lends itself to greater generalizability.

Gundersen's study (1989) attempted to (a) increase the knowledge of psychopathology of anorexia nervosa, and (b) investigate the extent to which personality variables measured by the main MMPI-I profile predict treatment outcome. To this end he studied 23 female inpatients categorized into poor outcome ($\underline{N}$=13) and good outcome ($\underline{N}$=10). The individuals were thus divided with the use of clinical evaluation and assessment of eating attitudes

using the Eating Attitudes Test. A group of 19 females with manifest anorexia nervosa in the acute phase were also utilized. All the patients in the study fulfilled the DSM-III-R (APA, 1987) criteria for anorexia nervosa. Half of the subjects also fulfilled the criteria for Histrionic Personality Disorder.

In comparing the poor outcome anorexic group to the acute phase anorexic group in this study, none of the main clinical scales signficantly differentiated the two groups. These non-significant differences in scores on all the main scales were contrary to the author's expectation that in a group of anorexic patients in the acute phase, individuals would show poor as well as good prognostic signs.

The difference in scores on seven of the 10 content scales proved not significant as well. However, on the Manifest Hostility scale, the scores of the poor outcome groups and the acute group were significantly different ($t = 1.59$; $df = 30$; $p < 0.05$). The difference on the Phobias scale was even more significant ($t = 3.10$; $df = 30$; $p < 0.0005$). A fair discrimination was obtained between groups on the Taylor Manifest Anxiety scale ($t = 2.32$; $df = 30$; $p < 0.01$). The poor outcome and acute groups displayed elevated scores scales 2 and 7. Thus, rather serious psychopathology is indicated for both groups. The subjects tended to display an ingrained depressive disorder (extremely elevated scale 2 and relatively low scale 9) and can be described as being self-deprecating, introverted, and avoiding personal and intimate relations. They could also be described as anxious with

obsessional inclinations (elevated scale 7).

The poor outcome group displayed significantly more elevated MMPI-I scores compared with the scores of the good outcome group. These significantly elevated main scales included scale 1 ($t = 2.21$; $df = 21$; $p < 0.01$), scale 2 ($t = 3.72$; $df = 21$; $p < 0.005$), scale 3 ($t = 2.54$; $df = 21$; $p < 0.01$), and scale 6 ($t = 2.68$; $df = 21$; $p < 0.01$). The significantly elevated content scales included the Psychoticism scale ($t = 3.04$; $df = 21$; $p < 0.005$), the Social Maladjustment scale ($t = 2.68$; $df = 21$; $p < 0.01$), the Family Problems scale ($t = 2.41$; $df = 21$; $p < 0.02$), and the Poor Health scale ($t = 2.91$; $df = 21$; $p < 0.005$). Other significantly elevated scales were the Manifest Hostility scale ($t = 4.20$; $df = 21$; $p < 0.0005$), the Authority Conflict scale ($t = 2.52$; $df = 21$; $p < 0.02$), and the Phobias scale ($t = 2.74$; $df = 21$; $p < 0.005$).

The apparent differences in profiles of individuals with differing outcomes seemed to indicate that the MMPI-I may be a useful prognostic instrument.

One limitation of the generalizability of this study's results is half of the subjects fulfilled the criteria of Histrionic Personality Disorder. This disorder may have influenced the personality profile and level of psychopathology exhibited by this population on the MMPI-I. This confound was not addressed by the author. The generalizability of the results to inpatients in the United States may also be hindered by the sociocultural differences between this country and Norway. Also, it is difficult to state with certainty that personality variables measured by the MMPI-I are related to

etiology or prognosis rather than being sequelae of eating difficulties. Consequently, final conclusions about the prognostic status of the MMPI-I related to anorexia nervosa cannot be definitively drawn from this study.

Biederman et al. (1986) believed that the presence or absence of a major depressive disorder in anorexic patients could be helpful in identifying meaningful subtypes through the presentation of differing MMPI-I profiles for anorexics with and without depression. They examined a group consisting of 22 inpatients in a medical center, six outpatients, and seven inpatients in an eating disorder unit and compared this group to a control group consisting of 25 healthy volunteers, that is, no medical or psychiatric disorders were present. Patients in both groups were of the same sex and similar socioeconomic status, age, chronicity, weight, and degree of weight loss. The differences observed in MMPI-I profiles apparently were not due to demographic differences between the groups of subjects
or biased sampling.

The difference between these two groups was presented as a function of scores on the MMPI-I. The findings indicated that anorexia nervosa patients with a current episode of nonbipolar major depression significantly differed from the anorexia patients without major depression in all but two MMPI-I clinical scales (5 and 9). Anorexics with major depression had six MMPI-I scales (2, 3, 4, 6, 7, and 8) with mean $\underline{T}$ scores > 2 $\underline{SD}$ ($\underline{T}$ > 70) above the mean, and those without major depression had none ($\underline{p} < 0.05$).

Significant differences were found in the number of subjects with 3, 4, and 5 or more significantly elevated scales with T > 70 when anorexic patients with major depression were compared to anorexics without major depression.

The MMPI-I profiles of anorexic patients with major depression suggested that these patients had a broad range of psychopathology that was not evident in the anorexic patients without major depression. Patients with major depression were socially withdrawn, had abundant maladaptive features and manifested somatic anxiety. In contrast, there was no identifiable pattern of functioning for the patients without major depression.

One difficulty with this study is the problem of determining what role the anorexia plays, if any, in the onset of depression. It is difficult to determine when the onset of depression occurred in relation to the anorexia, or vice versa. Other studies have found depressive symptomatology in anorexics without identifying the subjects as being diagnosed with depression (Pierloot et al., 1975; Casper et al., 1980; Casper et al., 1992; Eckert et al., 1982; Edwin et al., 1988; Scott & Baroffio, 1986; Scott & Thoner, 1986; Skoog et al., 1984; Small et al., 1981). The question also arises as to what role using adolescent subjects (mean = 16.6 years) has in influencing the findings, especially considering the fact that many adolescents experience periods of depression without the presence of an eating disorder. Further studies with these classifications could shed light on how anorexia and depression function together or influence each other.

Leon, Lucas, Colligan, Ferdinande and Kamp (1985) assessed general adjustment in anorexic subjects by analyzing MMPI-I data of 31 adolescent females who met DSM-III (APA, 1980) criteria for anorexia nervosa. Assessment was carried out at the time of hospitalization and again at discharge. Nineteen of the anorexia nervosa group were restrictors and 12 were the bulimic-purging subtype. Findings were compared to a normal weight group consisting of 37 females who were generally matched to the anorexic group according to age and socioeconomic status and had no history of an eating disorder. Signed consent was required of the high school students and a parent.

At admission, statistically significant differences between the bulimic and restrictor anorexics were demonstrated on the MMPI-I. On scale L anorexic restrictors' mean scores were higher and on scales 4 and 6 the bulimic anorexics' mean scores were higher. This group was more impulsive and demonstrated disturbed thinking. Significant changes in a less pathological direction were evident for the entire anorexic group at the end of the treatment on scales: 1, 2, 3, 6, 7, 8, and 0 on the MMPI-I. That is, decreases in somatic concerns, depression, anxiety, and general cognitive precoccupations were evident at the end of treatment. Treatment here consisted of (a) supportive encouragement to eat by a designated person, (b) individual psychotherapy, and (c) work with the family.

Questions arise concerning the affect on the results due to subjects returning completed forms by mail to the investigator.

For example, how can one account for the differences in an uncontrolled environment that may have influenced how the test was taken? Additionally, the need for signed parental consent may haveeliminated individuals from the study whose MMPI-I profiles may have altered the results. Once again, generalizability is limited by the methodology employed.

Summary of Findings - III

At the end of treatment two studies found decreases in clinical scales of the MMPI-I. Decreases in somatic concerns, depression, anxiety, and general cognitive preoccupations were evident. Skoog et al.'s study (1984) suggested a common constellation of personality characteristics for anorexia nervosa. However, Goodwin and Andersen (1988) found large standard deviations in elevations on MMPI-I clinical scales and concluded that anorexics vary considerably in personality. Differences in MMPI-I profiles of individuals with differing treatment outcomes (poor outcome, acute anorexia, and good outcome) suggested the MMPI-I may be useful in determining prognosis.

Body Image Distortion

Two studies focused on examining body image distortion, a common characteristic of anorexia nervosa. In possibly identifying personality characteristics connected with the distortion that perpetuates anorexia nervosa. Pierloot and Houben's study (1978) compared 31 anorexic patients with 20 inpatients presenting various neurotic manifestations, the control group. None of the correlations between personality characteristics as revealed by the

tests administered, including the MMPI-I, and the overestimation or variability of body size was significant. None of the MMPI-I indices showed any significant relationship to the phenomenon of overestimation and variability of body size. It was suggested that the patients' perceptions of their bodies may be more complicated than can be explained in terms of body size overestimation and is thus deserving of more research.

One problem with this study is that only a limited number of MMPI-I profiles were made available to the researchers. It is difficult to speculate how these additional results might impact the study's findings. Another problem is the lack of a non-patient control group which could have been utilized for a better sense of how women in this culture estimate their body size without the influence of a psychological disorder. Inclusion of a control group might provide insight into what extent the phenomenon of body size overestimation is not distinctively characteristic of this disorder, but possibly a culturally influenced phenomenon. Inclusion of such a group would also allow for greater generalizability of any significant findings.

Strober (1981) examined patterns of association between MMPI-I scores and two different measures of body image in 65 adolescent females diagnosed with anorexia nervosa according to DSM-III (APA, 1980) criteria. Collectively, the MMPI-I scales were significant predictors of body image disturbance. Only depressive and anxiety features (scales 2 and 7) contributed significantly to

the prediction of body size overestimation, while hypochondriacal trends and atypicality (scales 1 and 8) were accorded a statistically independent contribution to subjective body image distortion. This suggested that different personality configurations in anorexics might be associated with descriptively independent aspects of body image disturbance.

The results, however, are not fully generalizable beyond the specific methods and sample characteristics of the study. Older anorexics in an outpatient setting may exhibit different MMPI-I profiles even with the presence of depression. Also, in using adolescents' views of their bodies it is important to remember that increased anxiety, reduced self-esteem and other reactions to changes during puberty may influence the MMPI-I findings in addition to any body image distortions that occur specifically with anorexia. Additionally current societal expectations for a woman's physical appearance may have played into the body image distortions presented. And due to the correlational nature of the study, one cannot infer causality in the relationship between personality and body image variables.

Summary of Findings - IV

Conflicting results arose from studies on body image distortion. One study (Pierloot & Houben, 1978) found no MMPI-I indices showed any significant relationship to the phenomena of overestimation and variability of body size. Strober (1981), however, found depression and anxiety contributed to body image distortion. It was thought that patient's perceptions of their bodies

are more complicated than the terms body image distortion and body size overestimation can address.

Subtyping Anorexia Nervosa

For years anorexia was viewed as an eating disorder with symptoms that could vary within populations. That is, some anorexic individuals solely starved themselves while others binged and purged. As clinicians began to notice personality differences between these groups, investigators attempted to differentiate these variations into unique subtypes, restrictor (use of self-starvation without episodes of bingeing and purging to obtain thinnness) and bulimic (all these methods may be used). Several studies reviewed were more focused on examining the existence of subtypes of anorexia nervosa.

Scott and Baroffio (1986) were concerned with the fact that standardized psychometric measures had not often been utilized to compare the various eating disorders including anorexia, bulimia, and morbid obesity. They compared 30 inpatient anorexics, 30 inpatient bulimics and 30 outpatient morbidly obese individuals and used a control group of 30. Bulimics and anorexics were diagnosed on the basis of DSM-III (APA, 1980) criteria. Control subjects generally were matched to the experimental subjects on variables of age, sex, socioeconomic status, and geographical area. They were all of normal weight and screened to rule out any history of eating disorders.

A univariate analysis of variance was performed on the 3

validity scales and 10 standard scales utilizing non K-corrected raw scores. The results indicated that there was no significant difference in the overall profiles of the three experimental groups, but that all differed from the control group. The anorexic group significantly differed from the bulimic group on scales F and 0, from the morbidly obese group on F, 7, and 8, and from the control group on L, 5, and 9. There were no significant differences between any of the groups on scales 2 and 4.

A shared core disturbance for the three experimental groups was suggested by common elevations on scales 1, 2, and 4. The hypothesized similarities on scales 2 and 4 present a chronic clinical picture of immature, passive-aggressive, self-defeating individuals who are likely to engage in struggles of interpersonal control. This MMPI often suggests dependent, orally fixated, and addictive personalities. Scott and Baroffio (1986) concluded shared moderate elevation on scale 1 indicated these patients "defensively bind the anxiety of their emotional conflict and displace it onto somatic concerns, with resulting eating disorders" (p. 712).

Discriminating single scale differences also existed for the experimental groups. The anorexics and bulimics were considerably more elevated than the morbidly obese on Scale 8, which suggests that they have greater identity confusion and reality distortion (i.e., body boundaries). Scott and Baroffio (1986) stated that for these two groups "the body and self have fused and the control of eating has become a way to control who they are" (p. 712).

In contrast, morbidly obese individuals are not likely to be experiencing identity crises, even though they are probably not happy with their body (Scales 1 and 2). This finding may also be due to the fact that the morbidly obese individuals were outpatients. This group also showed significantlyless elevations on 6 and 7, an indication of stronger personal adjustment and self-acceptance.

The anorexics and obese were similar to each other on Scale 0 at a moderately introverted elevation. This is probably because anorexics and morbidly obese individuals show physical manifestations of their eating disorders.

Anorexics and bulimics demonstrated anxiety, Scale 1, which, coupled with the fear that their socially inappropriate behavior will be discovered, results in rumination and endless rituals around eating and weight.

The clinical status of the subjects used in this study limits the generalizability of the results beyond the inpatient population. The question arises concerning how the various eating disorders examined might appear on the MMPI-I if the individuals were outpatients.

Casper et al., (1980) were perplexed by the occurrence of bulimia with anorexia nervosa because its presence contradicts the common belief that patients with anorexia nervosa are always firm in their abstinence from food. They wanted to further characterize this patient population to determine whether the symptoms of bulimia represent an isolated occurrence or whether its association

with other behaviors, feelings, thoughts or attitudes justify a distinction from fasting or abstaining patients with anorexia nervosa. They studied 105 female anorexia nervosa inpatients: 53% had achieved weight loss by consistently fasting, whereas 47% periodically resorted to bulimia. The Feighner et al. (1972) diagnostic criteria for anorexia nervosa was used.

Daily eating binges were associated with elevations scales 2, 4, 6, 7, and 8. Increased frequency of vomiting was associated with higher scores on scale 2 ($r = .22$; $p < .05$), scale 4 ($r = .30$; $p < .01$), scale 6 ($r = .26$; $p < .01$), scale 7 ($r = .26$; $p < .01$), and scale 8 ($r = .24$; $p < .05$). Vomiting was present in the 36% of the study group. The high MMPI-I scores associated with bulimia confirmed the impression of an acutely disturbed, but struggling individual.

Casper et al. (1980) felt the data suggested that the more outgoing personality characteristics of anorexia nervosa patients with bulimia, "in connection with lessened impulse and self-control apparent in a distinct psychiatric symptomatology, allows for their differentiation from fasting patients into a subgroup of anorexia nervosa patients" (p. 1035).

The sample size of 105 is rather large compared to most studies and allows for more generalizability of the results. A limitation of this study would include the lack of inclusion of general MMPI-I profiles for the two groups being examined. Absence of this information does not provide an overall context for the stated results. Also, the lack of a control for comparison of the MMPI-I results limits the interpretation and generalizability of the results

beyond the population measured in this study.

Shisslak et al.'s study (1990) was a response to the lack of studies comparing bulimic women at three weight levels with each other and with a control group for each weight level (including anorexia nervosa) on psychological characteristics. They classified 146 female subjects into six groups: underweight bulimics, normal weight bulimics, overweight bulimics, underweight nonbulimics (restrictor anorexics), normal weight nonbulimics (normal control subjects), and overweight nonbulimics. Across the groups, the population sampled was not significantly different in age, height, education, or family income. To prevent confounding of results with treatment variables, the subjects recruited from the eating disorders clinic completed the test battery before receiving psychological treatment.

The underweight bulimic women exhibited the greatest amount of psychopathology on the MMPI-I, with five scales (3, 4, 5, 7, and 8) elevated above a T score of 70, followed by the overweight bulimics with two elevated scales (2 and 4) and the restrictor anorexics with one elevated scale (0). The normal weight bulimic group had no clinically elevated scales on the MMPI-I.

The restrictor anorexics had significantly lower scores than the other five groups on scales 3, 4, and 7. They also had significantly lower scores on scale 8 than all of the other groups except the normal control group.

The MMPI-I results of the restrictor anorexic group resembled a

defensive profile which was consistent with the denial exhibited by the typical restrictor anorexic who denies that she is too thin, even if she is emaciated, and who often denies having any psychological problem. The striking differences in psychopathology of the two underweight groups (restrictor anorexics and anorexic bulimics) support previous research that has indicated important differences between anorexics with bulimic symptoms and anorexics without such symptoms (Herzog & Norman, 1985).

Limitations of the study include the use of college students. Thus the results may not be generalizable to a clinical or community based population of anorexic and bulimic women. Also, no attempt was made to select subjects on the basis of their bingeing and purging behaviors, which may have impacted the MMPI-I results. However, because eating disorders are increasing among college students, the sample studied represents a population at high risk for development of eating disorders. Thus the results may provide valuable information for early interventions for this population.

Edwin et al. (1988) studied 68 consecutive inpatients diagnosed with anorexia nervosa. Thirty-nine subjects were classified as restrictors (ANR) with no bulimic complications. Twenty-seven were classified as having anorexia nervosa with bulimic complications (ANB), identified by an established pattern of binge-eating and self-induced vomiting as a method of weight control. The study was conducted to help tease out the relationships among

personality attributes, bulimic behaviors, and outcome in anorexia nervosa.

When MMPI-I standard scores, or T-scores, were averaged across all ten clinical scales, ANB patients were significantly more elevated than ANR patients: F (1,66) = 28.35, $p < .0001$. The F scale, reflecting dramatic distress and deviant attributions, and all clinical scales were higher among ANB patients, while the K scale, reflecting defensiveness, was higher among ANR.

Follow up time averaged 24 months, ranging from 6 to 64 months. Follow up time did not differ between subtypes: F (1,64) = .442, $p > .50$. The mean of MMPI-I clinical scale scores did not distinguish treatment failures from successes: F (1,66) = 5.72, $p > .40$. Only scale 9 distinguished the groups: treatment failures tended to be more hyperactive or disorganized, but moderately so. Discriminate function analysis elicited a linear combination of scales 2, 9, and 0: $p < .02$, suggesting that poor outcome may relate to higher levels of depression, disorganized activity, and social isolation. Eight-five percent of the failures were correctly identified using this formula.

For ANR patients the mean scores of MMPI-I clinical scales did not predict outcome, F (1,37) = 2.16, $p > .50$. Only scale 3 predicted outcome; thus ANR patients who acknowledged greater need for affection and attention may have fared better than others.

In summary, this study found that ANR patients are more likely to acknowledge isolation and mild to moderate depression or to

insist upon normality, that is, blatantly deny they have an eating problem. A self-dramatizing, affection-seeking style appears to predict positive outcome in the ANR group. Thus, those patients whose primary symptoms are those of excessive dieting and/or exercise, particularly if they produce defensive, normal, or mildly depressive MMPI-I profiles, or behaviors consistent with such profiles, may be taught and encouraged to develop more sociable and appropriate affection-seeking behavior.

Because the subjects in this study were inpatients, it is difficult to generalize these findings outside that setting, especially to anorexics who are in outpatient treatment and/or earlier stages of this eating disorder. However, the two co-authors did an excellent job in gathering information from the patients post-discharge. They had established rapport by consistently being involved with patients through initial screening and evaluation, and inpatient and outpatient treatment. This resulted in a high degree of cooperation at follow up. The results of this study leave room for creating treatment approaches which address and/or produce the interactive styles linked to positive outcome for anorexic restrictors in this study.

Summary of Findings - V

Studies attempting to subtype anorexia nervosa presented a chronic clinical picture of immature, passive-aggressive, self-defeating individuals (Scott & Baroffio, 1986). There were also suggestions of a dependent, orally fixated and addictive personality and demonstrations of introversion and anxiety

(Scott & Baroffio, 1986). Defensiveness and a less outgoing personality appeared to differentiate anorexia nervosa, restrictor subtype, from anorexia nervosa, bulimic subtype (Casper et al., 1980). It was also found that individuals with anorexia nervosa, restrictor subtype, who acknowledged greater need for affection and attention seemed to have a more positive treatment outcome (Edwin et al., 1988). In addition, a self-dramatizing, affection seeking style appeared to predict a positive outcome.

Personality Disorders

Examining the presence of personality disorders that co-exist with anorexia nervosa, both restricting and bulimic subtypes, lead to additional insight on personality characteristics found in this population. The hope was this information would result in better treatment interventions.

Piran et al. (1988) compared personality disorders in both restricting and bulimic anorexics. Thirty patients fulfilled DSM-III (APA, 1980) criteria for anorexia nervosa and 38 patients fulfilled, in addition, DSM-III (APA, 1980) criteria for bulimia. Unstructured interviews were used to derive DSM-III (APA, 1980) diagnoses, and consensus diagnosis was used.

A high incidence of DSM-III (APA, 1980) personality disorder diagnoses were found within the two eating disorder groups: 97.4% of bulimics and 86.7% of restrictors. The most common diagnosis found in the restricting anorexic groups was Avoidant Personality Disorder (60%) and the most common diagnosis in the bulimic anorexic group was Borderline Personality Disorder (55.3%).

On the MMPI-I, both groups showed a similar profile reflecting character pathology with increased depression, anxiety, poor concentration, and feelings of resentment and alienation. Both restricting and bulimic anorexics who require inpatient treatment seemed to display character pathology necessitating special attention in the treatment setting. A significant difference between groups was found only on Scale 9. Bulimics scored higher, which could be related to a propensity for discharge through action. Overcontrol and inhibition typified the restrictor anorexics.

Several aspects of Piran et al. (1988) raise questions about the generalizability of results. The higher rate of personality disorders found in the bulimic anorexics could reflect researcher biases in the unstructured portion of the study. Indications for hospitalization often involve factors related to character pathology. These factors may have influenced the results. Also, no detailed information about the general MMPI-I profiles for each group was provided. The question arises about the effect the presence of an Axis II disorder has on the MMPI-I results in addition to the presence of an eating disorder. It is difficult to determine to what extent scale elevations reflect each disorder respectively.

Casper et al. (1992) assessed personality dimensions in patients who had different types of eating disorders with a focus on adaptive rather than dysfunctional aspects of the personality. The clinical sample consisted of 50 female inpatients with either anorexia nervosa or bulimia nervosa. There were diagnosed according to DSM-III-R (APA, 1987) criteria. Patients with anorexia

nervosa were divided on the basis of their eating patterns into a restricting group (N=12), because they lacked present or past evidence of binge eating or pathological vomiting behavior, and a bulimic group (N=19). Nineteen bulimia nervosa patients were also included along with a control group (N=19) of normal female college and medical students.

Overall significant group differences were seen for the MMPI subscales (MANOVA $F = 4.80$; $df = 15, 183$; $p < 0.001$). Univariate results for the validity scales showed no differences for the L scale ($F = 2.2$; $p = 0.13$) or the K scale ($F = 2.6$; $p < .06$), but significant differences were observed on the F scale ($F = 7.0$; $p < .001$) where bulimia nervosa patients scored higher than normal controls ($t = 4.0$; $p < .001$).

The configuration for restricting anorexia nervosa patients was in the depressive range with peak scores on scales 2, 6, 7, and 0. However, none of these differences remained significant after covariate-adjusted analysis. In fact, the covaried scale 8 scores in restricting patients were lower than normal. Following MANCOVA, scores of the bulimic patients exceeded those of restricting patients on the scales 1, 3, and 8.

A tendency toward rebellious deviant behavior distinguished bulimia nervosa patients on the MMPI-I from normal controls and restricting anorexia nervosa patients. This finding is similar to other studies which found that impulsivity (Casper et al., 1992; Piran et al., 1988) is a characteristic of individuals with bulimia. Bulimic anorexia nervosa patients were emotionally more

adventurous than restricting patients and showed a profile indicative of characterological problems similar to bulimia nervosa patients on the MMPI-I. Restricting anorexia nervosa patients were more socially withdrawn and controlled.

The control group broadens the generalizability of the study's results to a larger population, allowing for interpretation to go beyond the inpatient setting. One limitation of this study is that tests were administered within four days after admission which allows for undernutrition to impact the results.

Summary of Findings - VI

A high incidence of personality disorders were found in the eating disorders studied (Piran et al., 1988). The most common diagnosis found among individuals with anorexia nervosa, restrictor subtype, was Avoidant Personality Disorder (Piran et al., 1988). However, individuals with anorexia nervosa, restrictor subtype, exhibited fewer personality disorders than anorexia nervosa, bulimic subtype. Overcontrol and inhibition typified those with anorexia nervosa, restrictor subtypes (Piran et al., 1988), while those with anorexia nervosa, bulimic subtype, exhibited a higher propensity for impulsive behavior (Casper et al., 1992).

Conclusions

Research on anorexia nervosa, particularly restrictor subtype, has been reviewed and critiqued in this paper. In the studies examined, findings were inconsistent in regards to personality characteristics

present for anorexia nervosa, restrictor subtype. One (Skoog et al., 1984) study questions whether such an assumption is even valid.

A profile pattern was seen across these several studies (Biederman et al., 1986; Goodwin & Andersen, 1988; Gundersen , 1989; Leon et al., 1985; Scott & Thoner, 1986; Small et al., 1981). Elevations on scales of 1, 2, 3, 6, 7, 8, and 0 were common with anorexia nervosa, restrictor subtype. Specifically individuals with anorexia nervosa, restrictor subtype, had expressions of concern, depression (Biederman et al., 1986; Goodwin & Andersen, 1988; Small et al., 1981) and alienation (Goodwin & Andersen, 1988; Gundersen, 1989) and were shown to have poor personality integration and a clear thought disorder (Goodwin & Andersen, 1988; Small et al, 1981). Obsessionality, anxiety (Biederman et al., 1986; Goodwin & Andersen, 1988; Shisslak et al., 1990), introversion (Gundersen, 1989), low ego strength (Scott & Thoner, 1986; Wingate & Christie, 1977), limited awareness of psychological problems (McFarlane et al., 1982; Scott & Thoner, 1986; Shisslak et al., 1990) and physical damage (that is, insisting they do not have a problem although obviously emaciated) were also found to be characteristic of the anorexics studied. These characteristics were reflected in the elevated scale scores previously mentioned.

Restrictor anorexics were similar to bulimics in having a moderate elevation on the scale 0 (Scott & Baroffio, 1986). However, these two groups were different in that bulimics were not likely to be experiencing identity crisis, and had stronger personal adjustment and self acceptance (lower elevations on scales 6 and 7).

The restrictor anorexics had significantly lower scores than these various bulimic groups on scales 3, 4, and 7.

Also, those anorexia nervosa subjects, bulimic subtype, who engaged in fairly regular binge purge cycles, as opposed to relying on self starvation (restrictor subtype) for weight control, tended to have significantly higher elevations on scales 2, 4, 6, 7, and 8. Bulimic individuals also scored higher, on average, on scale 9, which could be related to a higher propensity for discharge through action in this group.

A general caricature of individuals with anorexia nervosa, restrictor subtype, can be gathered from these studies. An unawareness of psychological damage was exhibited through the defense mechanism of denial, demonstrated by elevations on scale 3.

Characteristics exhibited were often of character, neurotic, psychotic, and psychosomatic disorders and these findings were not different from schizophrenics studied (Small et al., 1981). Thought disorders manifested as body image distortions, were present (Goodwin & Andersen, 1988). Social alienation (Goodwin & Andersen, 1988; Small et al., 1981) and introversion (Gundersen, 1989) were also present. Less personal resources seemed to be available for coping with problems (Scott & Thoner, 1986).

Treatment outcome was also an area of interest for researchers. Several of the studies reviewed were interested in attempting to identify personality characteristics that may indicate a better prognosis for individuals with anorexia nervosa, restrictor subtype.

The only scale that seemed to come closest to predicting outcome was scale 3. That is, restrictor anorexics who acknowledged greater need for affection and attention may fare better than individuals with other types of eating disorders due to the ability to address these specific needs in treatment (Edwin et al., 1988). In addition, a self-dramatizing, affection seeking style appeared to predict a positive outcome.

A better general prognostic indicator was a lower general MMPI-I profile, with no scales scoring in the pathology range of 2 SD or above (Eckert et al., 1982) Unimproved patients had an elevated scale 8 score, whereas those anorexics who did improve did not have scale 8 as their highest scale score (Pierloot et al., 1975). This particular scale has been associated with greater identity confusion and body image distortion, which are some of the more difficult characteristics to address in treatment .

While some commonalities in personality characteristics found in these studies may be pointed out, it still remains that a definitive personality profile for anorexia nervosa, restrictor subtype, has not yet been discovered. The debate continues as to whether such a subtype can be differentiated by personality characteristics.

Treatment Implications

Better understanding of personality characteristics most commonly exhibited by anorexia nervosa, restrictor subtypes, on the MMPI-I is viewed as a major step toward developing better

treatment approaches for this population. The belief is that better long term results would results from such specialized interventions. The most beneficial forms of treatment for anorexia nervosa, restrictor subtype would most likely include approaches that address the various personality factors that seem to reappear in the studies reviewed: anger turned inward (Scott & Thoner, 1986), body image distortion (Pierloot & Houben, 1978; Strober, 1981) extremely poor personality integration (Small et al., 1981), limited personal resources for coping with problems (Scott & Thoner, 1986; Wingate & Christie, 1977), alienation (Goodwin & Andersen, 1988; Gundersen, 1989; Small et al., 1981) and the presence of a depressive state (Biederman et al, 1986; Eckert et al., 1982; Goodwin & Andersen, 1988; Gundersen, 1989; Leon et al., 1985; Small et al., 1981). These factors appear to be the most prominent hindrances to therpeutic work.

Therapy that would address the above issues and generate awareness around attempts at establishing and maintaining control through eating may disrupt this self-destructive cycle. Thus, utilizing an intervention approach that (a) helps these individuals develop new ways of establishing control in their lives, particularly in relation to eating; (b) works with them on better awareness of their emotional needs that drive their self-starvation; (c) addresses the family issues that somehow energize this self-destructive cycle; (d) equips these individuals with some skills for long term, healthier ways of living may yield longer lasting results.

Some researchers have suggested that a behavioral approach at the onset of treatment would be helpful in helping the individual return to a safer weight level. This important step would allow them to be more receptive to any therapy utilized (McFarlane, 1982) after normal eating has returned. Once the individual is out of the range of immediate health risks, it is easier to begin the task of addressing the depression and poor personality integration (Epling & Pierce, 1992).

One important finding for clinicians to keep in mind as interventions are created is that with individuals with anorexia nervosa, restrictor subtype, the higher the level of pathology as seen in an MMPI-I profile, the poorer the prognosis for recovery (Eckert et al., 1982). It is believed that with such broad ranging levels of pathology, it is difficult to adequately address the various factors contributing to this eating disorder. Thus, it is likely that a relapse may occur (Epling & Pierce, 1992)

The next section addresses specific concerns with the current body of research on anorexia nervosa, restrictor subtype, and contains suggestions for areas of future research.

Implications for Future Research

Further study is needed to evaluate the stability of the personality change found in studies such as the one conducted by Skoog et al. (1984). Assessment of the true effectiveness (i.e., long term return to health) of treatment could be examined through longitudinal

studies covering more than the first few months after completion of treatment. Environmental factors in addition to the personality characteristics (return to dysfunctional family, ability to earn a living, etc.) of the individual with anorexia nervosa, restrictor subtype, may provide some insight into treatment effectiveness. There have been few attempts to conduct such a study with anorexic restrictors.

Additional research focusing on subtyping anorexia nervosa may add clarity to the conflicting findings of the studies reviewed. A better understanding of distinct personality characteristics for the anorexia nervosa, restrictor and bulimic subtypes, would contribute to better treatment interventions for these individuals. Questions remain as to what factors influenced the contradictory findings. Was it subject selection, research design, duration of illness, the presence of additional psychological disorders not accounted for, weight at the time of assessment or a variety of other factors not yet considered? These areas need to be examine more closely in order to determine successful intervention strategies.

An important avenue to explore in searching for personality characteristics of anorexic restrictors is utilizing the Minnesota Multiphasic Personality Inventory - 2 (MMPI-2) (Hathaway & McKinley, 1989) in such studies. MMPI-I norms are out of date and the normative sample of the MMPI-2 more closely approximates current demographics in the United States. In the few years since its introduction it has been normed on a wide variety of

populations and has been found to be useful in differentiating some of the more subtle state and trait aspects of individual's personalities. This may prove to be quite useful in devising a more refined and effective treatment approach for this disorder.

To date no studies have focused on examining anorexia restrictors from various cultural backgrounds (Epling & Pierce, 1992). This data could prove to be quite helpful in devising treatment interventions for individuals who may be influenced by environments and pressures different from the populations that have been examined thus far. It may be helpful to have insight into different rates of anorexia nervosa, restrictor subtype, for different cultures when developing appropriate treatment approaches. Perhaps issues such as degree of acculturation to mainstream America may influence the onset and progress of this disorder. Without this vital information, attempts at treatment may be missing important characteristics of influence which drive the anorexia, restrictor subtype, for non mainstream cultured individuals. Questions arise concerning therapist competency to work with this population without a better understanding of the role of culture and anorexia nervosa, restrictor subtype.

Another area of study that has not been addressed to any great extent is males who have anorexia nervosa, restrictor subtype. Although our culture seems to have a preference for men who are muscular and large, 5% of all individuals with anorexia nervosa are men, (APA, 1987). Data on this population might allow clinicians to begin to more effectively work with these men (Romeo, 1986).

Important differences in terms of the impact of gender and resulting differences in socialization may be currently overlooked in treatment approaches. This also calls into question the ethical parameters of working with this population.

Various differences in personal demographics may impact both the onset and treatment of anorexia nervosa, restrictor subtype. Thus, it is just as important for clinicians to examine these qualities as it is to examine common personality characteristics in anorexia nervosa, restrictor subtype. This variety of information may increase the long term effectiveness of treatment interventions for this population.

Current literature on anorexia nervosa, restrictor subtype, appears to be limited in demographic variables that are explored along with the disorder's personality characteristics. It is possible that important information which could improve or perhaps eliminate current treatment interventions would result from studies on multicultural and bi-gender populations with this disorder. When these factors are better understood, a broader population of individuals with anorexia nervosa, restrictor subtype, can be treated more successfully.

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USE OF THE MMPI-I IN IDENTIFYING PERSONALITY CHARACTERISTICS OF ANOREXIA NERVOSA, RESTRICTOR SUBTYPE: A REVIEW OF THE LITERATURE

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